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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/336,636	06/18/1999	KAZUTOMO HASEGAWA	FUJA-16.217	7893

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EXAMINER	
KUMAR, PANKAJ	
ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 05/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/336,636	HASEGAWA ET AL.	
	Examiner	Art Unit	
	Pankaj Kumar	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 June 1999* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Tyrrell US pat. no. 5185736.

3. Regarding claim 1, Tyrrell teaches a digital subscriber line (Tyrrell: from table of abbreviations, DS-1 is digital signal level 1; col. 94 line 40 states "DS1 Line" and it is inherent to allow a user to subscribe to it) communicating system for communicating between a transmitting side and a receiving side through a communication line, comprising: a sliding window generating unit for generating a sliding window (Tyrrell fig. 21 "RX Direction Framer") based on a timing signal (Tyrrell fig. 21: "clock recovery") representing a periodical noise duration (Tyrrell "Capacitors C18, C11, C14 and C23 provide approximately a 1 ms time constant to filter against noise and long transitionless periods of the NRZ signal on the data lines."; thus periodic noise duration is represented); and a sliding window (Tyrrell col. 95: lines 52-56 "frame aligned") transmitting unit for transmitting (Tyrrell col. 95: lines 52-56 "transmit side") modulated (Tyrrell mentions modem thus modulation is involved) symbol (Tyrrell col. 95: lines 52-56 "two outgoing RXSBI links leave ... Each RXSBI bitstream can be frame aligned ... on a command received via a VI communication channel in the transmit side.") according to said sliding window through said communication line to said receiving side; said sliding window generating

unit comprising: a hyperframe counter (Tyrrell col. 96 lines 2-15 discuss channel numbers and bit numbers) for periodically counting a predetermined number of continuous transmitting modulated symbols constituting a hyperframe synchronized with said timing signal (Tyrrell col. 96 line 7 "Master Frame Sync"); and a decoder for discriminating, based on the count value output from said hyperframe counter, whether a transmitting data symbol belongs to a far end cross talk duration at said receiving side or a near end cross talk duration at said receiving side. (Tyrell col. 16 2nd full paragraph " Path Status consists of three components. The first is far end B3 errors which are counted in each STS interface. These error counts are sent to the Controller in a VI channel through the TSI/TSM. The second is the STS Path Yellow indicator which is bit 5. The received STS Path Yellow status bit i placed in a VI channel bit and sent through the TSI/TSM to the Controller accompanied by an I bit on any valid change of state. The transmitted STS Path Yellow indicator bit value is sent by the Controller in a VI channel bit to the STS interface through the TSI/TSM. The third is bits 6-8 which are unassigned.")

Regarding claim 2, Tyrrell teaches the digital subscriber line communicating system according to claim 1, wherein said hyperframe counter is reset each time when said hyperframe counter counts said predetermined number of continuous transmitting data symbols (Tyrrell col. 96 states 16 bits per channel, 32 channels, alternating 7 bit sync word; col. 9 lines 64-65)

Regarding claim 3, Tyrrell teaches the digital subscriber line communicating system according to claim 1, wherein said transmitting side is a central office and said receiving side is a remote terminal (Tyrrell "The low speed ports communicable with DS-1 signals are connected to the

high speed redundant ports via time slot multiplexers (TSM's)."; offices are mentioned in Tyrrell and central offices are usually high speed and terminals can be low speed); said central office comprising: a timing signal generating unit for generating said timing signal synchronized with a periodical noise (Tyrrell "Capacitors C18, C11, C14 and C23 provide approximately a 1 ms time constant to filter against noise and long transitionless periods of the NRZ signal on the data lines.") including said periodical noise duration (Tyrrell "filter against noise and long transitionless periods of the NRZ signal") which interferes with said central office and said remote terminal; a receiver equalizer (Tyrrell "Following the 3 dB pad is a bandpass equalizer with a characteristic impedance of approximately 75 Ohms."); and a sequencer (Tyrrell DNC based on quote below) for effecting a transition of the status of initialization of said central office during an initialization period before starting usual communication, said initialization period including an activation (Tyrrell: Ready signal based on quote below) and acknowledgement sequence (Tyrrell Active signal based on quote below.) (Tyrrell "The redundant Controller (DNC) provides two signals, Ready and Active, that indicates the state of the equipment (TSI/TSM, STS-1/OC-1 interface and System Clock). Initially the Controller asserts the Ready signal (if able to be ready) to the COA. The COA then determines which side is to be active and sends an "Active" select line to the selected Controller. The selected Controller then acknowledges with an Active output signal to the COA."), a transceiver training sequence for performing an initial training of said receiver equalizer (Tyrrell fig. 16B: EQUALIZER, LOOP TEST CONTROL), a channel analysis sequence for measuring the quality of said communication line (Tyrrell "The network controller in turn monitors the system performance and provides A/B path switching (for the redundant paths commonly used in

telecommunications) as well as status information communicated to a craft/orderwire/alarm (COA) module."), and an exchange sequence for determining the transmitting capacity of said communication line based on the measured quality of said communication line (Tyrrell col. 2 2nd full paragraph: "The time slot multiplexers provide a communication path for provisioning an alarm from the high speed interface to the low speed interface via a network controller. The network controller in turn monitors the system performance and provides A/B path switching (for the redundant paths commonly used in telecommunications) as well as status information communicated to a craft/orderwire/alarm (COA) module. This COA module monitors the A and B paths and determines which side should be active."; col. 12 lines 44-57).

Regarding claim 4, Tyrrell teaches the digital subscriber line communicating system according to claim 3, wherein, said sequencer (Tyrrell "The redundant Controller (DNC) provides two signals, Ready and Active ... ") effects the transition of the status based on the value counted by said hyperframe counter (Tyrrell col. 96 lines 2-15 discuss channel numbers and bit numbers – Values would not be counted if the DNC does not provide the correct signals to let data through).

Regarding claim 5, Tyrrell teaches the digital subscriber line communicating system according to claim 3, wherein, during said transceiver training sequence, said exchange sequence, and said channel analysis sequence, said initialization is carried out by transmitting modulated symbols through only the inside of said sliding window. (Tyrrell elements of fig. 21 are incorporated in fig. 16B since fig. 21 is a diagram of DS1 (signal format) interface unit (col. 4 fig. 21 paragraph) and fig. 16 is a diagram of the electrical transceiver (col. 3 fig. 16 paragraph) where DS1 would

be used. The remaining elements of this claim have been previously pointed out in figs. 16 and 21)

Regarding claim 6, Tyrrell teaches the digital subscriber line communicating system according to claim 3, wherein, during said transceiver training sequence said exchange sequence, and said channel analysis sequence except for a quality measuring sequence, said initialization is carried out by transmitting modulated symbols through only the inside of said sliding window (discussed above especially in claim 5), and during said quality measuring sequence in said channel analysis sequence, said initialization is carried out by transmitting modulated symbols through both the inside (Tyrrell fig. 21: signals going through the direction framer and into the processing block) and the outside of said sliding window (Tyrrell fig. 21: signals going around the direction framer and into the processing block).

Regarding claims 7-9, they are discussed above with respect to the other claims.

Regarding claim 10, Tyrrell teaches the digital subscriber line communicating system according to claim 8, wherein, according to a single bitmap mode (Tyrrell "For ESF formats, the DS1 interface monitors only the bit mapped mode to determine if a remote alarm exists, however the architecture does not preclude the monitoring of the message oriented version for future releases."), during said transceiver training sequence, said exchange sequence, and said channel analysis sequence, said initialization is carried out by transmitting modulated symbols through only the inside of said sliding window. (Tyrrell discussed above)

Regarding claim 11, Tyrrell teaches the digital subscriber line communicating system according to claim 8, wherein, according to a dual bitmap mode (Tyrrell "For ESF formats, the DS1 interface monitors only the bit mapped mode to determine if a remote alarm exists, however the architecture does not preclude the monitoring of the message oriented version for future releases."; section 4.2.2 in col. 37 shows a bitmap table with multiple bits), during said transceiver training sequence, said exchange sequence, and said channel analysis sequence except for a quality measuring sequence, said initialization is carried out by transmitting modulated symbols through only the inside of sliding window, and during said quality measuring sequence in said channel analysis sequence, said initialization is carried out by transmitting modulated symbols through both the inside and the outside of sliding window. (Tyrrell discussed above)

Regarding claim 12, Tyrrell teaches the digital subscriber line communicating system according to claim 8, further comprising: a sequence transition determining unit for making a transition, in synchronization with said timing signal (inherent for activity to be synchronous with timing signal), from said activation and acknowledgement sequence to said transceiver training sequence or from said transceiver training sequence to said channel analysis sequence. (Tyrrell discussed above)

Regarding claim 13. Tyrrell teaches the digital subscriber line communicating system according to claim 3, wherein, according to a dual bitmap mode, said modulated symbols are transmitted

from said transmitting side through both the inside and the outside of said sliding window (discussed above especially in claim 6), and said modulated symbols are used for training of said receiver equalizer by said receiving side only when said receiving side is in a far end cross-talk duration (Tyrrell col. 17 section 2.4.1.2 "... recognition of a code will be to loop after receiving 3 consecutive codes and remain looped until the code is not received for 3 consecutive frames.")

Regarding claim 14. Tyrrell teaches the digital subscriber line communicating system according to claim 3, wherein, according to said dual bitmap mode, during the training of said receiver equalizer in said transceiver training sequence, a step size for updating coefficients of said receiver equalizer (Tyrrell: "The unit is equipped with automatic equalization and an AGC circuit which will accommodate the required range of input cable loss ... ") is made to be zero in said near end cross-talk duration (it is inherent in a properly functioning system for an adaptive equalizer to approach optimal coefficients with an eventually reduced step size), or to be a value smaller than the value in said far end cross-talk duration in said near end cross-talk duration at said receiving side, so that said transceiver training sequence is carried out continuously in said far end cross-talk duration and said near end cross-talk duration at said receiving side. (Tyrrell discussed above)

Regarding claim 15. Tyrrell teaches the digital subscriber line communicating system according to claim 3, wherein said receiving side comprises: a synchronization symbol detecting unit for detecting a synchronization symbol included in each of superframes which constitute said hyperframe; an inverse synchronization symbol detecting unit for detecting an inverse

synchronization symbol (Tyrrell "The Barker Code (bits 1-7) will be inverted on alternating frames.") included in said hyperframe; and an inverting unit for rotating the phase (Tyrrell col. 34 lines 65-67 "... 7 bit barker code. This code is alternated on even and odd frames with its complement ..."; thus, something is doing this alternation.) of each carrier signal of the detected inverse synchronization symbol, except for the carrier signal of a pilot tone (Tyrrell "The DC signal from the integrator passes through an inverting, amplifying stage with a gain of eight."), by substantially 180° to obtain an inverted inverse synchronization symbol having the same phase as the phase of each of the detected synchronization symbols (Tyrrell col. 34 lines 65-67 "alternated"); the detected synchronization symbols and the inverted inverse synchronization symbol being used for the training of said receiver equalizer. (Tyrrell col. 34 lines 65-68 "... code is alternated ... to prevent accidental framing on a repeated steady state pattern". Thus Tyrrell is training to prevent accidental framing on a steady state pattern.)

Regarding claim 16. Tyrrell teaches the digital subscriber line communicating system according to claim 3, wherein for watching or re-synchronizing the superframe or the hyperframe synchronization (discussed above with Tyrrell), in the case where the synchronization symbol is detected at the receiving side, the synchronization is checked with detection of the next inverse synchronization symbol, and in the case where the inverse synchronization symbol is detected, on the other hand, the synchronization is checked with the next detected synchronization symbol (Tyrrell "The Barker Code (bits 1-7) will be inverted on alternating frames.").

Regarding claim 17. Tyrrell teaches a digital subscriber line communicating system for communicating between a transceiver in a central office and a transceiver in a remote terminal through a communication line, wherein, during timing recover training sequence (Tyrrell col. 34 lines 61-62 " ... synchronized by a unique framing pattern in time slot zero") between said central office and said remote terminal, an inside symbol of a downstream sliding window is formed by a first kind of signal (Tyrrell col. 34 line 65 "7 bit Barker code"), and an outside symbol of said downstream sliding window is formed by a second kind of signal (Tyrrell col. 34 line 65-66 "This code is alternated on even and odd frames"), said first kind of signal and said second kind of signal being obtained by modulating a carrier signal but being different in phase by a predetermined angle (Tyrrell col. 34 line 66; since they are alternated, they are modulated and changing in phase by 180 degrees), and said transceiver in said remote terminal recognizes whether a received symbol belongs to a far end cross-talk duration at said remote terminal or a near end cross-talk duration at said remote terminal, by detecting the phase of the output of a fast Fourier transform of said carrier signal, so as to recognize the phase of a timing signal which represents a periodical noise duration. (Tyrrell discussed with respect to other claims)

Regarding claim 18, they are discussed with respect to the other claims.

Regarding claim 19. Tyrrell teaches a digital subscriber line communicating system for communicating between a central office and a remote terminal; said central office comprising; a phase-locked loop circuit (Tyrrell section 5.1.4) for synchronizing a network timing reference signal, having a frequency higher than the frequency of a first timing signal, with an oscillating

signal of a crystal oscillator provided in said central office, to generate a master clock signal; and a timing signal regenerating circuit for shifting the phase of said first timing signal to provide a synchronization in phase with the phase of said master clock signal so as to generate a second timing signal to be used in said central office. (Since Tyrrell teaches faster and slower communication in col. 2 2nd full paragraph: "The time slot multiplexers provide a communication path for provisioning an alarm from the high speed interface to the low speed interface via a network controller. The network controller in turn monitors the system performance and provides A/B path switching (for the redundant paths commonly used in telecommunications) as well as status information communicated to a craft/orderwire/alarm (COA) module. This COA module monitors the A and B paths and determines which side should be active.", the two timing signals, synchronization and other elements of this claim are inherent)

Regarding claims 20-24, they are discussed above with respect to the other claims.

Regarding claim 25. Tyrrell teaches the transceiver according to claim 22, wherein, during said transceiver training sequence said exchange sequence, and said channel analysis sequence except for a quality measuring sequence, said initialization is carried out by transmitting modulated symbols through only the inside of said sliding window, and during said quality measuring sequence in said channel analysis sequence, said initialization is carried out by transmitting modulated symbols through both the inside and the outside of said sliding window. (Tyrrell 102 discussed above especially in claims 6 and 13.)

Regarding claims 26-28, they are discussed above with respect to the other claims.

Regarding claim 29. Tyrrell teaches the transceiver according to claim 22, wherein said receiving side comprises: a synchronization symbol detecting unit for detecting a synchronization symbol included in each of superframes which constitute said hyperframe; an inverse synchronization symbol detecting unit for detecting an inverse synchronization symbol included in said hyperframe; and an inverting unit for rotating the phase of each carrier signal of the detected inverse synchronization symbol, except for the carrier signal of a pilot tone (Tyrrell 102 up to here discussed above), by substantially 180° to obtain an inverted inverse synchronization symbol having the same phase as the phase of each of the detected synchronization symbols; the detected synchronization symbols and the inverted inverse synchronization symbol being used for the training of said receiver equalizer. (Tyrrell 102 discussed above)

Regarding claims 30-35, they are discussed above with respect to the other claims.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

5. Chen et al. US pat. no. 5,526,347.

Regarding claim 1, Chen teaches a digital subscriber line (Chen col. 1 line 6: digital filters is stated thus digital signal is inherent and it is inherent for signals to be subscribed to) communicating system for communicating between a transmitting side and a receiving side

through a communication line, comprising: a sliding window generating unit for generating a sliding window (Chen fig. 3: 50) based on a timing signal (Chen fig. 3: "time delay") representing a periodical noise duration (Chen fig. 3: echo residual); and a sliding window (Chen fig. 2, delay elements, T, are creating the sliding window) transmitting unit for transmitting modulated (Chen col. 1 line 43 "modulator") symbol according to said sliding window through said communication line to said receiving side; said sliding window generating unit comprising: a hyperframe counter (Chen fig. 3: "COUNTER") for periodically counting a predetermined number of continuous transmitting modulated symbols constituting a hyperframe synchronized with said timing signal (fig. 3: Chen input is X(nT) and echo residual is e(nT). Since they have the same notation, they are related to the same time and thus synchronized); and a decoder for discriminating, based on the count value output from said hyperframe counter, whether a transmitting data symbol belongs to a far end cross talk duration at said receiving side or a near end cross talk duration at said receiving side (Chen col. 4 3rd full paragraph).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (703) 305-0194. The examiner can normally be reached on about 9:00 AM to 7:30 PM Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on (703) 305-4378. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800.

PK
May 2, 2002

CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600 5/6/02